

Exercise Science

The Prevalence of Overuse Injuries in NCAA Division III Sports

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Introduction

Most sports-related injuries are the results of collisions or high speed contact; however, the category of overuse injuries in sports is starting to be acknowledged more due to the increase in research on the topic (Yang et al., 2012). Unlike most contact injuries, overuse injuries have the potential to be prevented (Yang et al., 2012). Overuse injuries are usually sustained from the repetitive movement, which causes increased strain on the area which is repeatedly being used. Over long periods of time, this strain can lead the area to be subjected to creep, which is sometimes recognized as the continued extension of a material due to some sort of pressure, tension, or load (“Understanding Creep,” 2012). According to Hooke’s Law, this relationship can only continue as long as the limit of the body’s elasticity is not surpassed (The American Heritage Medical Dictionary, 2007, n.d.). A high percentage of overuse injuries occur in the knees, lower back, and shoulders (Yang et al., 2012).

Previous research by Yang et al. (2012) examined data that had been collected from Division I collegiate athletes. They studied the rates of overuse and acute injuries sustained over three seasons. As far as overuse injuries are concerned, the researchers found that female athletes were at greater risk of suffering from overuse injuries; however, further research would need to be conducted to find the reason for this. The purpose of this study was to examine the prevalence of overuse injuries in collegiate sports and compare the prevalence in male and female sports.

Methods

Subjects for this study include Division III athletes from Lagrange College who were active participants during any of the following years: 2002-2015. All research was approved by the Institutional Review Board of Lagrange College.

The data were categorized by area of injury in the following categories: Cervical Spine, Thoracic Spine, Lumbar Spine, Shoulder, Upper Arm (Bicep/Tricep), Elbow, Forearm, Wrist, Hand, Thumb, Fingers, Abdomen, Hip (including IT Band), Hip Flexor, Quadriceps, Hamstring, Groin, Pelvis, Knee, Glute, Calf, Shin, Ankle, Achilles, Foot, and Toes. Data from a total of six teams were used in this study. Each team was compared to its opposing sex counterpart. The six groups were Men's Cross-country, Women's Cross-country, Baseball, Softball, Men's Basketball, and Women's Basketball. Independent samples t tests between sexes were run to compare the number of injuries in each category. Since there were multiple t tests run, a Bonferroni's correction was applied to avoid type I error. Statistical significance was set at $p \leq 0.05$. Cohen's d effect size was also calculated to evaluate practical significance.

Results

There were few statistically significant findings between the male and female groups of similar or same sports groups, which can be seen in Table 1. There was no statistical significance found amongst the Cross-country group; however, some injury groups from the Cross-country comparisons showed practical significance such as Hip (IT), Knee, Shin, and Ankle. Within the Men's and Women's Basketball group, there were three statistically significant injury comparisons (Thoracic spine, shin, and fingers). This only includes relatively 11.54% of the injuries areas that are possible. The Baseball/Softball group has the largest amount of statistically significant comparisons (See Figures 1-4 below). There were eight injury groups with statistically significant values. These eight groups were shoulder, upper arm, elbow, wrist, lumbar spine, quadriceps, ankle, and foot. This covers roughly 30.8% of the injury groups that were examined. Within the male and female group comparisons, none of the sports groups reached statistical significance for 50% of the injury groups available.

Table 1. Results from team injury area comparison, displaying p values and Cohen's d effect size estimates.

Sport	Injury Area	<i>p</i> Value	Cohen's <i>d</i>
Baseball/Softball	Wrist	0.002	1.49
Baseball/Softball	Quad	0.005	1.33
Baseball/Softball	Upper Arm	0.006	1.32
Baseball/Softball	Elbow	0.001	1.76
Basketball	Finger	0.006	1.31

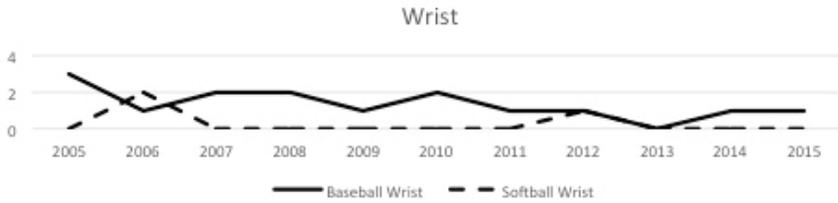


Figure 1. Comparison of wrist injuries between baseball and softball from 2005 to 2015.

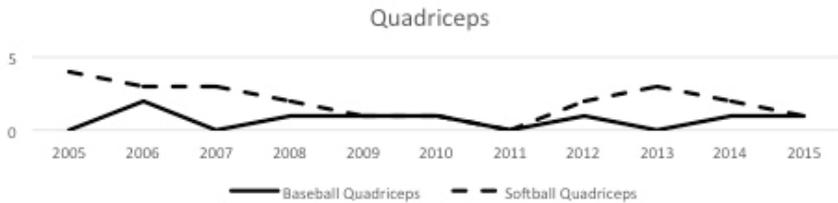


Figure 2. Comparison of quadriceps injuries between baseball and softball from 2005 to 2015.

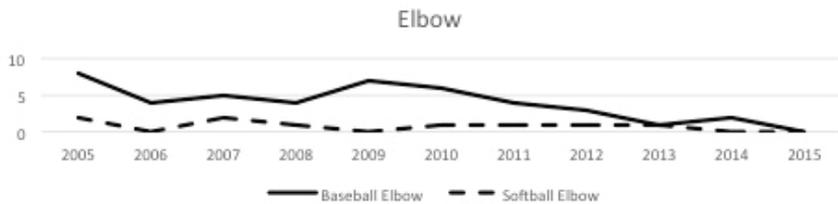


Figure 3. Comparison of elbow injuries between baseball and softball from 2005 to 2015.

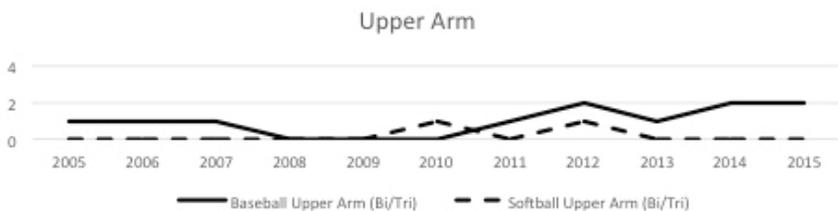


Figure 4. Comparison of upper arm injuries between baseball and softball from 2005 to 2015.

Discussion

The purpose of this study was to examine the prevalence of overuse injuries in NCAA Division III sports. As previously stated, Yang et al. found that there are more knee, shoulder, and lower back overuse injuries. The same study suggests that females are more susceptible to overuse injuries than males. In this study, lower back and shoulder injuries were more statistically significant than most other values, and knee injuries follow closely behind. However, within the significant findings, a majority of the male athletes have more overuse injuries reported than females. These findings contradict the evidence found in the study completed by Yang et al. This difference could be the result of a lack in the knowledge of roster size for each team. If Team A was larger than Team B, then there is a larger chance for more injuries because there are more people.

Conclusion

This study showed that overuse injuries may not be sex specific. In this particular case, the males suffered from overuse injuries more than the females, which contradicts previous research. Roster size could have played a part in these findings. Roster size would have an effect on the relevance of the injuries data. To find out if this plays a role in overuse injuries, the study would have to be recreated. This time the roster numbers would need to be incorporated so that the difference in each study could be compared.

Acknowledgments

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